

Direct Instruction Ideas

Resources

1. Clickers
2. Mini-Clips
3. Small - whiteboards with markers
4. LCD Projector
5. Survival Guides
6. Smartboard

Set-up

1. Bell work questions /activity starting most classes (related to previous day's concepts) (e.g., 4 questions – what is square, square root, right triangle, algebra equation)
2. Fixed seating plan – with groups of at least 2 (e.g. deliberately match students)
3. Every lesson has a clear title (e.g., Pythagoras Theorem)
4. Agenda is on the side
 - Review (square, square root, right triangle, simple equations)
 - The Egyptians and Pythagoras
 - The Pythagorean Theorem
 - Frayer Model Summary

Starting Out – Link to Previous Day's Concepts

1. Random method of checking homework (e.g., check each others homework, hand into teachers, clickers, circulate while students are doing bell work)
2. What did we do in the previous class (e.g., types of triangles)?
 - a. Think-pair share
 - b. Check survival guides
3. Give a previous days problem
 - a. Put problems (e.g., three triangles) on the board
 - b. Ask students how to solve problem (e.g., to guide me through problem)
4. Review key concepts required for today's lesson (Use clickers)
 - a. Square
 - b. Square root
 - c. Right Triangle
 - d. Simple algebraic equation

Lesson Core

1. Key principle is to get student involved as much as possible
 - a. Get student to draw right triangle
 - b. Ask which side is the largest? Is it always the largest? (don't give answer)
 - c. The side opposite the right angle is called the Hypotenuse
 - d. Label the sides of the triangle a, b, c with c always being the hypotenuse
 - e. **History and Purpose:** Brief history of theorem starting with Egyptians then leading to Pythagoras
 - Maybe use Google earth
 - Show picture of Pyramids or great buildings (that have right angle triangles)
 - Maybe bring in a carpenter's square (as a prompt)
 - Leading to why you might want to know if there is a right angle

- f. The Pythagorean Theorem with diagram
(Have students [copy diagram and formula into survival guide](#))
 - $c^2 = a^2 + b^2$
- g. **Example 1:** Give student problem to [work in pairs](#)
 - Draw diagram
 - If we know $a=3$ and $b=4$, what is c ?
 - [Circulate](#)
- h. **Solution 1:** Have students guide your through the problem after giving them 5 minutes to solve
 - [Have students put example in survival guide](#)
- i. **Example 2:** Give a second problem for student to [work on in pairs](#) ($a=5$, $b=11$, $c=?$)
 - Have a two or more groups work on the board
 - [Circulate](#)
- j. **Solution 2:** Take up answers put on board
 - Involve class
 - Point out key areas (like drawing a diagram, proper form)
- k. **Example 3:** Give third problem for student to work on their own (without partner) ($a=10$, $b=12$, $c=?$)
 - [Circulate](#)
- l. **Solution 3:** Use whiteboards with markers to display answers

Consolidation

1. Frayer Model in Pairs
2. Create Frayer model as a class
3. Give three homework questions on a handout – the last question is with b and c identified, not a and b – Tell students this is a challenge questions